Health Consultation No. 6

Residential Soil Contamination

PRECISION NATIONAL CORPORATION

CLARKS-SUMMIT, LACKAWANNA COUNTY, PENNSLVANIA

CERCLIS NO. PAD053676631

OCTOBER 18, 1999

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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Prepared by:

Pennsylvania Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

chromium and that PADOH evaluate the results and determine if the presence of this metal poses a health threat to their family or others involved with constructing a patio or other recreational activities in their yard. ThermoRetec agreed to conduct the sampling.

On May 27, 1999, ThermoRetec collected four (4) residential soil samples (JEN1-4) along Arch Avenue. ThermoRetec analyzed three of the samples (JEN2-4) and one sample (JEN1) was analyzed by Severn-Trent Laboratories on a priority basis to accommodate the resident's summer patio construction schedule [2]. All the samples were analyzed for trivalent and hexavalent chromium. This HC addresses our evaluation of the results of these soil analyses and discusses our findings.

DISCUSSION

Figure 2 shows the locations of the four (4) surface soil samples (3-6 inches) obtained by ThermoRetec. Soil sample (JEN1) was collected immediately south of the residence at the base of a retaining wall [2]. Trivalent chromium and hexavalent chromium were detected in JEN1 at concentrations of 7.92 milligram per kilogram (mg/Kg) and less than 0.44 mg/Kg, respectively. Samples JEN2 and JEN3 were collected from damp swale locations where seeps reportedly existed under high water table conditions. Sample JEN4 was collected immediately below the discharge pipe from a residential cistern overflow [3]. Trivalent chromium was detected in JEN2-4 samples at concentrations of 6.96, 45.0, and 156 mg/Kg, respectively. Hexavalent chromium was detected in JEN2-4 samples at concentrations of less than 0.77, 1.56, and less than 0.85 mg/Kg, respectively.

The levels of total chromium (trivalent and hexavalent) in U.S. soils range from 1.0 to 2000 mg/Kg, with a mean of 37 mg/Kg [4]. Although trivalent chromium occurs naturally in the environment, hexavalent chromium is almost always related to anthropogenic activity. The concentrations of total chromium in two of the samples exceed the mean. However, the levels of total chromium in all the samples are within the background range of U.S. soils.

ATSDR has developed health-based Comparison Values (CVs) which are chemical-specific concentrations used to determine environmental contaminants of health concern. We base our evaluation of potential health threat on the CVs, when they are available. These CVs include Reference Dose Environmental Media Evaluation Guides (RMEGs) and Cancer Risk Evaluation Guides (CREGs). When the concentration of a chemical is at or above a CV it does not necessarily represent a health threat. When this occurs, we evaluate daily exposure dosage to determine if adverse health effects are likely to occur.

For this HC, we compared the levels of trivalent and hexavalent chromium in soil to CVs to assist us in determining if the chromium in the soil is a health hazard. The maximum concentrations of trivalent chromium (156 mg/Kg) and hexavalent chromium (1.56mg/Kg) is below ATSDR's RMEGs for these contaminants of 80,000 and 200 mg/Kg, respectively. The levels of trivalent and hexavalent chromium in the residential yard soil are substantially below ATSDR oral RMEGs

SUMMARY

This document responds to a request by a family near the Precision National Plating Services, Inc. site (PNPS) during a Public Availability Session, that the Environmental Protection Agency (EPA) sample soil in their yard and that the Pennsylvania Department of Health (PADOH) evaluate the sampling results and determine if hexavalent chromium is present in their yard soil at levels that could harm their health.

PADOH in cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) evaluated the soil sample results and determined that the low level of hexavalent chromium present in the soil is not an apparent public health hazard.

The interpretation, advice, and recommendations provided in this health consultation (HC) are based on data currently available and are specific to the PNPS.

BACKGROUND AND STATEMENT OF ISSUES

PNPS owns and operates a chromium plating facility at 198 Ackerly Road, approximately 0.75 miles north of Clarks-Summit, Pennsylvania (Figures 1-3). The 46-acre property is located in a rural area and has operated as a plating facility since 1956. Historical data indicates that hexavalent chromium has migrated off the site in groundwater and surface water and has contaminated nearby media including soil and sediments near the site [1,2,3].

The site is located in a mountainous region of northeastern Pennsylvania at an elevation of approximately 1,190 feet above mean sea level (amsl). A topographic high of 1,240 feet amsl is located approximately 400 feet south of the facility. Based on topographic data, the direction of surface drainage at the site is to the north-northwest (downhill) at a gradient of approximately 660 feet per mile. The surrounding area is drained by Ackerly Creek, which flows generally from northeast to southwest toward Glenburn Pond [1].

PADOH and ATSDR have been determining the public health significance of residential exposure to site-related hexavalent chromium in offsite media since October 1997 and have published a series of five (5) health consultations (HC) and have participated in public meetings to address community concern.

On May 19, 1999, PADOH, ATSDR, EPA, and ThermoRetec Consulting Corporation (ThermoRetec) hosted a Public Availability at the Waverly Community House in Waverly. ThermoRetec is a consulting firm hired by the Precision National Corporation. During the meeting PADOH and ATSDR shared the results of our HCs with citizens who had health concerns regarding potential offsite exposure to hexavalent chromium that originated at PNPS. During the meeting, a family requested soil in their residential yard be sampled for hexavalent

and do not represent a noncancer health threat. ATSDR does not have a CREG for the ingestion of chromium. However, the low levels also do not pose an apparent cancer health threat. Therefore, recreation or construction activities, in the areas evaluated in this HC, do not pose an apparent public health hazard.

Further, the levels of trivalent and hexavalent chromium in the residential yard soil are also substantially below the Pennsylvania Medium-Specific Concentrations for Inorganic Regulated Substances in residential soil and therefore do not require special handling or disposal during the building of a patio or other construction activities [5].

CHILD HEALTH INITIATIVE

As part of ATSDR's Child Health Initiative, ATSDR public health consultations indicate whether site-related exposures are of particular concern for children. There is no known exposure of children or adults to levels of trivalent or hexavalent chromium in the surface soil in the residential areas evaluated in this HC that would harm their health.

CONCLUSIONS

Low levels of trivalent and hexavalent chromium were detected in surface soil in the residential yards evaluated in this HC. ATSDR and PADOH conclude that the levels of chromium in the soil pose no apparent public health hazard to children or others recreating in these areas. We also conclude that exposure to the soil during construction activity posed no apparent public health hazard and no special handling or disposal of soil removed during a building project is necessary.

RECOMMENDATION

PADOH recommends no follow up activities at this time.

REFERENCES

1. U.S. Agency for Toxic Substances and Disease Registry, Health Consultation #1, Precision National Corporation, Clarks-Summit, Lackawanna County, Pennsylvania, CERCLIS NO. PAD053676631. Atlanta: ATSDR, October 15, 1998.

2. Correspondence between ThermoRetec and Mr. David Jennings, Jr., June 7, 1999.

3. Facsimile and accompanying data package to Robert Stroman, Pennsylvania Department of Health from Paul Gruntmeyer, ThermoRetec, July 6, 1999.

4. U.S. Agency for Toxic Substances and Disease Registry (ATSDR), Toxicologic Profile for Chromium (Update). ATSDR, February 22, 1999.

5. Pennsylvania Bulletin, Volume 27, Number 33, August 16, 1997.

6. Soil sampling data prepared for Thermo Retec by Severn-Trent Laboratories, May 26, 1999.

PREPARER OF REPORT

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CERTIFICATION

This Precision National Plating Services Site Health Consultation has been prepared by the Pennsylvania Department of Health under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Roberta Erlwein
Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this Health Consultation and concurs with its findings.

Richard E. Gillig
Chief, SPS, SSAB, DHAC, ATSDR

FIGURES

Figure 1

Precision National Site Location Map

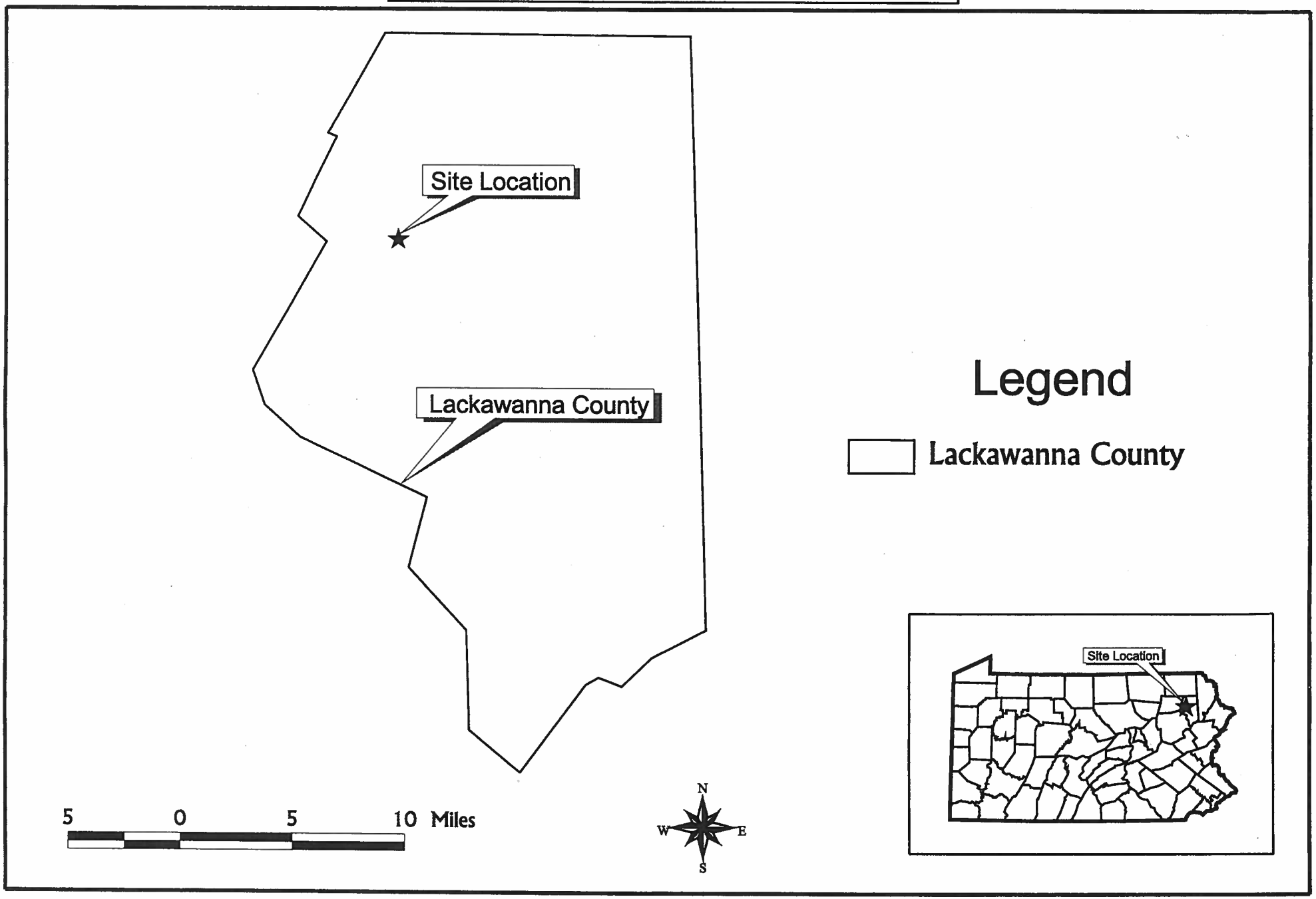
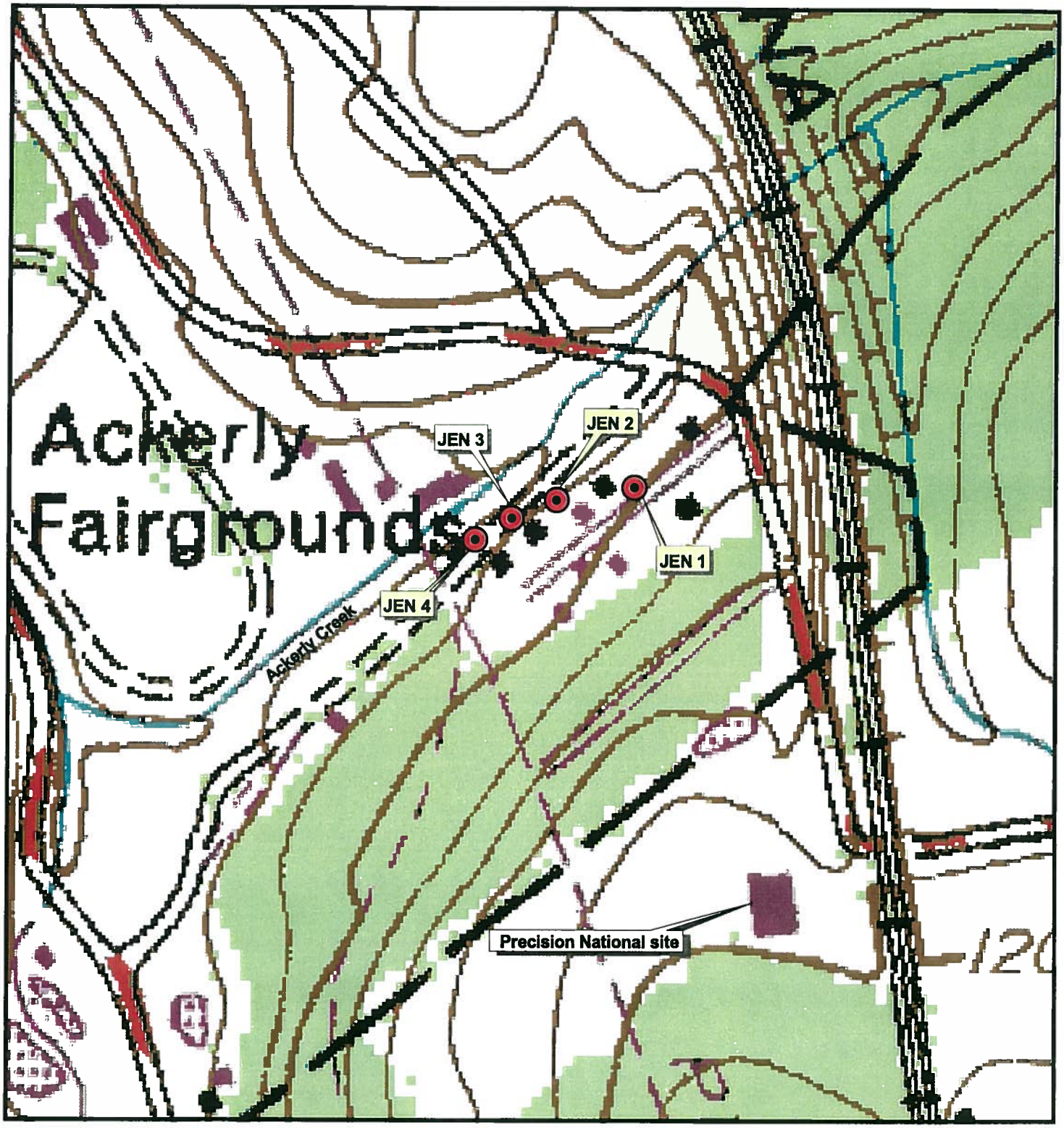


Figure 2

Precision National
Surface Soil Sample Locations



200 0 200 400 600 800 Feet

N
W E
S

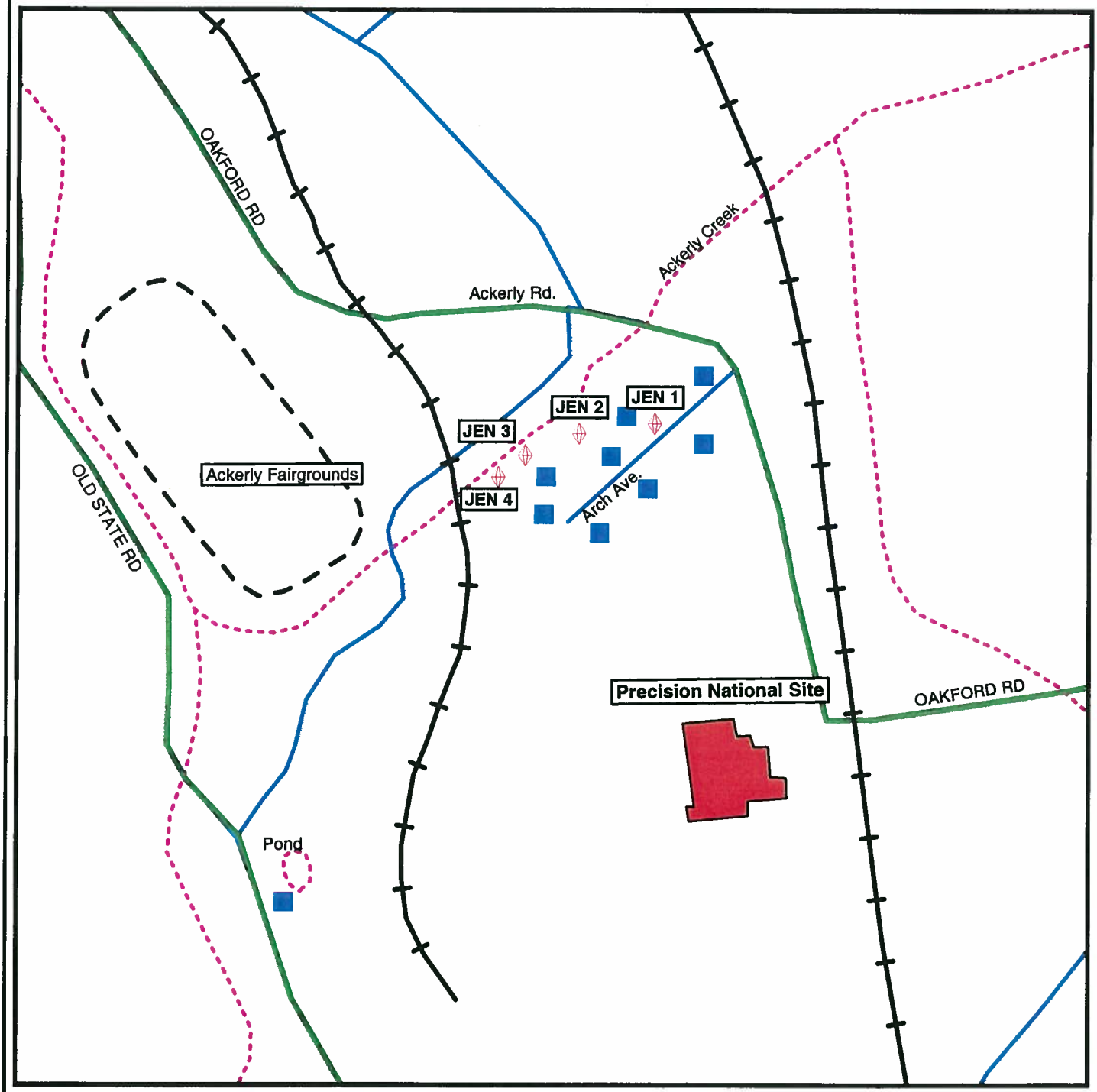
Legend

Soil sample

Figure 3

Precision National

Chromium Surface Soil Sample Locations



Feet
0 100 200 300 400 500 600

Layers
Track
Roads
Railroads
Site building
Streams
Highways
Homes
Soil sample

N
W E
S